Hardwood Management in a Nutshell

By TIM ALBRITTON, Forest Operations Specialist, Alabama Forestry Commission

Recently I had the opportunity to attend the Upland Hardwood Silviculture Training Workshop in Ashville, North Carolina, at the Bent Creek Experimental Forest. The workshop was an intensive one-week session that focused on the essential skills needed to develop technically sound silvicultural prescriptions. The training covered a wide range of areas including forest site classification, intermediate stand management, hardwood ecology and regeneration, and low quality hardwood stand management, just to name a few.

Dr. David Loftis, Project Leader at Bent Creek, along with the rest of the staff, has studied hardwoods for decades. Most of Dr. Loftis' career has been spent studying oak management in the Southern Appalachian Forest. I wish I could summarize everything he and his staff have done and put it into a nice neat article, but that is just not possible. That would be like me trying to give you a towering oak tree; it just can't be done. But, I can give you an acorn and you can grow your own towering oak. With that goal in mind, I will try to hit some of the highlights, and I hope that in doing so, you can understand hardwood management in a nut shell.

Alabama's Hardwoods

Alabama's hardwood forests are a valuable resource in many ways. They obviously supply a growing hardwood industry with the raw material to manufacture hundreds of forest products. They also provide food for wildlife, nesting for birds and other tree-dwelling creatures, beauty, fall color, and much more. The latest forest inventory indicated that hardwood growth increased by 52 percent over a period from 1982 to 1990. Nearly half of Alabama's commercial forests are comprised of hardwoods (approximately 10 million acres).

Alabama's forests are 95 percent privately owned. Proper management is critical to the continued sustainability of this valuable resource. The Alabama Forestry Commission stands ready to assist landowners with management decisions, but all too often we are called in to give advice on regeneration options after a stand has been harvested. Much more planning is required if successful oak regeneration is desired.

Successful Oak Regeneration

If you own some upland hardwood timber and oak is a part of the species mix, you probably want to maintain it. There are several key things you can do to help maintain oaks after a harvest. One key element needed for successful oak regeneration is the presence of advanced oak reproduction. Natural regeneration after a harvest cut comes from new seedlings established at or after the time of the harvest cut, from older seedlings established prior to the harvest cut (advanced reproduction), and from sprouts from stumps or roots of the harvest trees.

This swamp chestnut oak is a good example of advanced regeneration present in a forest stand. This advanced regeneration is possible because of increased sunlight, which is the result of an adjacent clearcut four years ago.

No sunlight means no advanced oak regeneration. Shade tolerant species will be dominant.

The most reliable source of reproduction in oaks is the advance reproduction. You can assess your advanced reproduction by simply walking through your hardwood stand and looking for sapling size oaks in the understory. The larger the sapling (usually 1.5-2.0 inches in diameter), the greater the probability the tree will make it to the next stand.

If you don't have a sufficient number of advanced regeneration trees, you should not plan an overstory cut. Studies have shown that hardwood stands can be manipulated to improve the advance regeneration, thereby improving the chances of maintaining an oak component in the next stand. This can be done by using herbicides to kill the competing understory—usually dogwood, red maple, and other shade tolerant species. The improved condition created by this treatment, mainly the increase in sunlight, stimulates the growth of established oak advance reproduction.

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Understanding the delicate balance between too little sunlight and too much sunlight is a key in manipulating oak regeneration. If you thin or open up a stand too much, the amount of sunlight triggers the reproduction and growth of yellow poplar, sweetgum and other species that out-compete oaks. A mature hardwood stand left in a closed canopy situation for years usually produces shade-tolerant species in the subcanopy such as dogwood. Therefore, some stand manipulation is usually needed to improve the oak's chances of competing in the next stand.

Most of what I have described thus far deals with a mature hardwood stand nearing final harvest. If you have a young hardwood stand, your goals will undoubtedly be different. Depending on your objectives for the property, one consideration could be the Crop Tree Management approach.

Crop Tree Management

Crop Tree Management is a system of forest resources management designed to concentrate the potential growth of a forest stand on the trees most likely to help you achieve your goals. In most cases, this is the production of high quality timber for future income. This is accomplished by cutting competing trees and releasing the crop trees so they are free to grow.

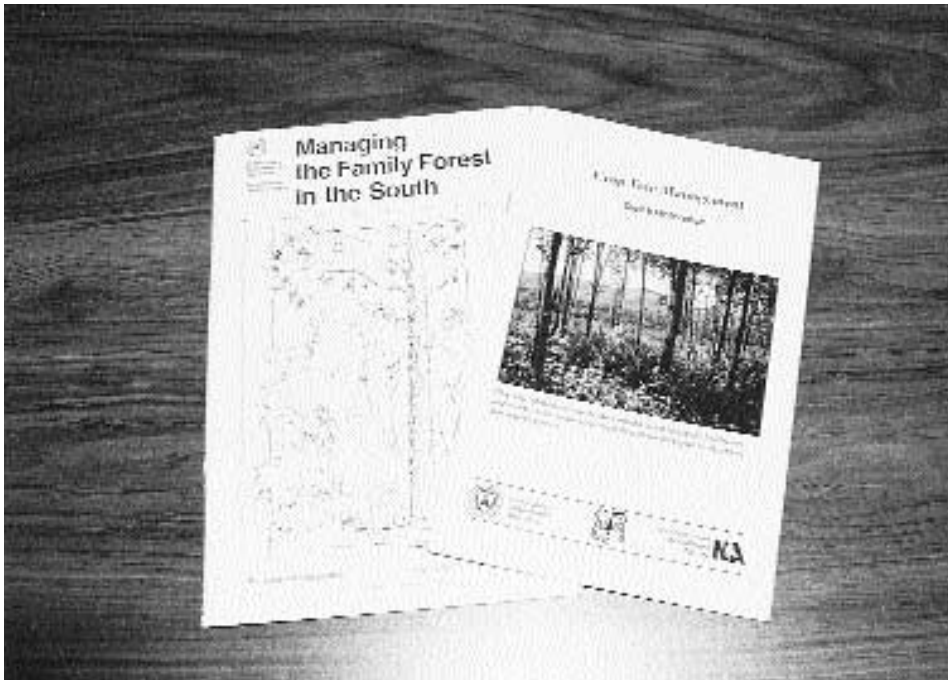
This system usually requires the selection of 25 to 50 crop trees per acre and is best when applied to an even-age stand at crown closure or between ages 15 to 20. The purpose is to focus an early growth advantage to selected crop trees by reducing adjacent competition. The advantages of applying this system are the following:

- It increases the liklihood the crop trees will persist in the stand.
- It increases the diameter growth of the quality crop trees.
- It gives some control of the future species composition.

The U.S. Forest Service published a *Crop Tree Management Quick Reference* guidebook in 1994. This guide explains the Crop Tree Management system using a seven-step process. Once you have identified the crop trees, all that is needed to implement the practice is a chainsaw. The cut trees can be utilized for firewood, pulpwood, fence posts, or allowed to rot where they fall.

The publication *Managing the Family Forest in the South*, also by the U.S. Forest Service, provides information on intermediate cultural treatments for hardwoods. These publications cannot take the place of advice from a registered forester, but they can help landowners understand hardwood management in a nutshell.

If you would like a copy of the *Crop Tree Management Quick Reference* guidebook, the *Managing the Family Forest in the South* publication, or other information on managing your hardwoods, contact your local Alabama Forestry Commission office, or call Tim Albritton at 334-240-9348 (e-mail: albrittont@forestry.state.al.us). The Alabama Forestry Commission offers practical scientific advice and management assistance. Contact your local AFC office for referral to your county forester.



Publications with information on hardwood regeneration are available from the Alabama Forestry Commission.